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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,265	01/14/2004	B. Ryland Wiggs	N1076	4898

7590 04/04/2007

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EXAMINER	
ALI, MOHAMMAD M	
ART UNIT	**PAPER NUMBER**
3744	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/757,265	WIGGS, B. RYLAND	
	Examiner	Art Unit	
	Mohammad M. Ali	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *63-84* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *63,64,66,68-70,72,74,75,77,79-81 and 83* is/are rejected.

7)☒ Claim(s) *65,67,71,73,76,78,82 and 84* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 63 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggs et al., (5,671,608) in view of Aoyagi et al., (6,390,183). Wiggs et al., disclose a direct expansion geothermal heat pump except R410A refrigerant. See Abstract. Aoyagi et al., teach the use of R410 refrigerant in a heat exchanger for the purpose of enhancing heat transfer coefficient and to protect ozone layer. See column 6, lines 46-61, column 7, lines 29-45 and column 16, lines 15-39. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the direct expansion geothermal heat pump of Wiggs et al., in view of Aoyagi et al., such that R410 refrigerant could be provided in order to run a direct expansion heat pump system. Claims 68 and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable between 50 psi and 180 psi could be provided in order to run a direct

expansion heat pump system.

Claims 64 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggs et al., (5,671,608) in view of Aoyagi et al., (6,390,183) as applied to claim 63 above and further in view of Suzuki et al., (6,840,058). Wiggs et al., in view of Aoyagi et al., disclose the invention substantially as claimed as stated above. However, Wiggs et al., in view of Aoyagi et al., do not disclose polyolester oils. Suzuki et al., teach the use of polyolester oil as lubricating oil in carbon dioxide refrigerantl system for the purpose of running of the refrigerant control system with a compatible lubricant oil with the carbon dioxide refrigerant. See column 11, lines 14-28. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the direct expansion geothermal heat pump of Wiggs et al., in view of Aoyagi et al., and further in view of Suzuki et al., such that polyolester oil could be provided in order to run a direct expansion heat pump system with carbon dioxide refrigerant.

Claims 69 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggs et al., (5,671,608) in view of Brasz et al., (6,892,522) as applied to claims 68 and 79 above and further in view of Aoyagi et al. Wiggs et al., in view of Brasz et al., disclose the invention substantially as claimed as stated above. However, Wiggs et al., in view of Brasz et al., do not disclose R410 refrigerant. Aoyagi et al., teach the use of R410 refrigerant in a refrigerant heat exchanging cycle for the purpose of enhancing heat transfer coefficient and to protect ozone layer by using high pressure HFC

refrigerant. See column 6, lines 8-36. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the direct expansion geothermal heat pump of Wiggs et al., in view of Brasz et al., and further in view of Aoyagi et al., such that R410 refrigerant could be provided in order to run a direct expansion heat pump system.

Claims 70 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiggs et al., (5,671,608) in view of Brasz et al., as applied to claim 68 and 79 above and further in view of Suzuki et al. Wiggs et al., in view of Brasz et al., disclose the invention substantially as claimed as stated above. However, Wiggs et al., in view of Brasz et al., do not disclose polyolester oils. Suzuki et al., teach the use of polyolester oil as lubricating oil in a climate control system for the purpose of running of the climate control system. See column 11, lines 14-28. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the direct expansion geothermal heat pump of Wiggs et al., in view of Brasz et al., and further in view of Suzuki et al., such that polyolester oil could be provided in order to run a direct expansion heat pump system with carbon dioxide refrigerant.

Allowable Subject Matter

Claims 65, 67, 71, 73, 76, 78, 82 and 84 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments, see arguments, filed 02/28/07, with respect to the rejection(s) of claim(s) 64, 70, 75 and 81 under 103 rejection have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of new prior art.

Response to Arguments

Applicant's arguments filed 02/28/07 have been fully considered but they are not persuasive against the other claim rejection except the rejections as mentioned above. Applicant argued that the carbon dioxide refrigerant is used in his invention only for gravitational problem in deep well not for the reason of enhancing heat transfer and Ozone layer protection reasons. The examiner disagrees. Other than carbon dioxide (high pressure refrigerant) refrigerant regular refrigerant can also be used in the deep well a pump is necessary during the cooling season to move the liquid refrigerant. Now question arises why carbon dioxide refrigerant is chosen? The answer is, it is cost effective because of enhance heat transfer coefficient. Again if a refrigerant which is not environmentally friendly but suitable for use in deep well as like the carbon dioxide refrigerant without using any pump for DX system refrigerant can be used. The answer would be negative because of its unfriendliness behavior to the environment. Therefore, on the sake of argument and to present an alternative reason to the prime season for

selecting carbon dioxide refrigerant, the Applicant raised the question of gravitational season for choosing the carbon dioxide refrigerant. But it is not the prime reason, which is stated above. Apart from these, claims are so broad that it does not include any element that the invention relates to a deep well over 50 feet. The claims are also valid for depth of well where there is no gravitational problem and also for regular split type refrigeration system therefore, they can be rejected without considering the gravitational consideration too. The Applicant also mentions that the teachings of air source heat exchanger cannot be used with geothermal (DX) system heat exchanger. Examiner again disagrees. Examiner believes that a teaching of a refrigerant heat exchanger can be conveniently utilized with any other type refrigerant heat exchanger irrespective of it type as geothermal DX, air source or water source. So far The Examiner believes that the Applicant wanted to define a DX system refrigeration as a direct expansion refrigeration system. Examiner finds there is no difference between the definition of Applicant's direct expansion refrigeration system and the regular split type refrigeration system having a compressor , condenser, evaporator and an expansion valve. (See US Patent 6,722,141 to Ferris et al., column 3, lines 13-25; US Patent 5,214,932 to Abdelmalek, lines 8-18 and US Patent 6,427,454 to West, lines 40-43 and lines 58-61). Even though in the case of a nonanalogous art is permissible to use its teachings when the teachings are based on valid ground. In response to applicant's argument leading to a nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for

rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the reference teaches the most relevant subject matter relating to the invention as stated above. Therefore, rejections are proper.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad M. Ali whose telephone number is 571-272-4806. The examiner can normally be reached on maxiflex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J. Tyler can be reached on 571-272-4808. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Md. Mohsin Ali

MOHAMMAD M. ALI
PRIMARY EXAMINER